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ABSTRACT

This set of five digests provides an overview of the issue of attaining excellence in vocational education. The first digest deals with effective schools research, characteristics of effective schools, implications of effective schools research for high school vocational education, and strategies for improving school effectiveness. Covered in the second digest are the following aspects of the effects of career education on student achievement and retention: excellence and career education goals; career education models; and the effects of career education on school achievement, school retention, and career and educational planning skills. The next digest, which examines time on task in vocational education, discusses the nature, importance, and use of time on task in secondary and postsecondary vocational education as well as factors related to efficient use of time and strategies teachers can use to improve time spent on task. Included in the digest on employers' expectations of vocational education are discussions of the following: how employers grade vocational education, why they hire vocational graduates, what vocational programs should emphasize, what are some barriers to cooperating with vocational education, and how these barriers can be overcome. The final digest addresses the nature and importance of the new basics; acceptable basic skills attainment levels for vocational students; and strategies, resources, and models available for use in teaching the new basics through vocational education. Each digest includes a bibliography of resources, most of which are available from the Educational Resources Information Center (ERIC) system. (MN)

OVERVIEW on EXCELLENCE

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OVERVIEW on EXCELLENCE

ERIC DIGEST NO.31

Clearinghouse on Adult, Career, and Vocational Education

EFFECTIVE SCHOOLS RESEARCH AND VOCATIONAL EDUCATION

Effective Schools Research

Effective schools research focuses on identifying characteristics of and conditions in schools that are more successful in achieving important educational outcomes. Most of the effective schools research has centered on elementary schools and has used the acquisition of basic skills (as measured by standardized tests) as the criterion for identifying effective schools (Edmonds 1982 p. 1). However, some research has been conducted at the secondary level, and vocational education research provides information about criteria that can be used to determine vocational education effectiveness. This *ERIC Digest* relates effective schools research to vocational education.

Characteristics of Effective Schools

In identifying characteristics of effective schools, researchers have recognized the importance of using the school as the unit of study, rather than the entire school district or the individual program or classroom within the school. This is predicated on the assumption that the school building is a distinct social unit, having its own social climate and being influenced by the leadership characteristics of the principal, the total staff group composition, and the nature of the student body.

Edmonds (1982) has summarized the following five characteristics of effective schools:

- The leadership of the principal is notable for substantial attention to the quality of instruction.
- There is a school-wide emphasis on basic skills instruction, with the staff viewing this as a primary goal.
- The school climate is conducive to learning (i.e., it is safe and orderly).
- Teacher behaviors convey the expectation that all students will obtain at least minimum mastery of learning content.
- There is a system for measuring pupil achievement as the basis for program evaluation, thus tying student progress to performance evaluation.

The study of the effectiveness of high schools presents special problems not evident at the elementary level. Rutter et al. (1979) point to the fact that high schools have many purposes for all students as well as different purposes for different sets of students. Other factors that add to the complexity of studying high school effectiveness are the tracking of students, the freedom of student choice of curriculum options, a subject orientation rather than pupil orientation of teachers, and the limited time that each teacher has contact with students.

Even with the differences between elementary and secondary schools, characteristics of effective schools overlap between these two levels. Brookover and Lezotte (1979) found the following characteristics descriptive of effective secondary schools: a belief that students can learn and that teachers can teach, high expectations for student success and high academic standards, clear norms of appropriate behavior, a manageable school size, a principal who is an assertive instructional leader, clear and sought-after school goals and objectives, reinforcement (rewards and praise) for students, increased time on task, and regular monitoring or assessment of student learning and school effectiveness.

Implications of Effective School Research for High School Vocational Education

Effective schools research stresses the importance of clear goals for programs. Since the comprehensive high school has diverse programs, specific goals (criteria for success) need to be established for each program. Research has been conducted on the outcomes (effects) of vocational education. Two recent reports (Mertens et al 1980; National Institute of Education 1981) present lists of criteria that have been used to judge vocational education effectiveness.

Mertens et al. (1980) suggest three broad classes, including employment, education/training, and ancillary criteria. Employment outcomes include employment/unemployment, occupation related to training, earnings, employee satisfaction, employer satisfaction, attitudes toward work, and work habits. Education/training outcomes include basic skill attainment, academic abilities, attendance and retention, occupational skill attainment, continuing education, and satisfaction with training. Ancillary outcomes include aspirations, attitudes and values, feelings of success, and citizenship.

The National Institute of Education's *Vocational Education Study* (1981, p. VII-3) lists the following outcomes associated with participation in secondary vocational education:

- Gainful employment, as indicated by employment status, hours and weeks worked, wages and earnings, occupational status, relatedness of job to training, self-employment, and job satisfaction
- Occupational knowledge and skills
- Occupational advancement
- Years of secondary school attained
- Citizenship
- Credentials for postsecondary enrollment

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Although outcomes are specific to programs, school effectiveness research supports the necessity of recognizing the influence of the total school on the achievement of specific outcomes. Student achievement in vocational education may well be influenced by the characteristics suggested by effective schools research, such as principal leadership in instructional planning, school-wide endorsement of program goals, positive school climate, teacher expectations for student performance, and the availability and use of measures of student achievement.

A study of factors relating to job placement of secondary vocational education students (McKinney et al. 1981) supports the notion that the characteristics of effective schools are related to vocational education program effectiveness. Schools having effective vocational education programs (using the criteria of number of students placed in jobs related to the training they received) had the following characteristics:

- Administrators, counselors, and teachers agreed that the primary purpose of vocational education in their school was the placement of students in jobs related to their training.
- Principals were committed to the placement of students.
- Teachers assumed responsibility for placing their students in jobs related to their training.
- Frequent use was made of needs assessment surveys for planning and evaluating vocational education programs.

Improving School Effectiveness

Neufeld, Farrar, and Miles (1983) caution that effective schools research does not provide quick answers for school improvement. Improving school effectiveness should be viewed as an "ongoing, long-term process that will alter beliefs, relationships and emphases within the school" (p. 12). As schools have initiated improvement efforts, they have found that the following processes support the effort:

- **Build Staff Commitment**—School improvement is a total building effort that requires staff commitment as well as time for staff to meet and develop understanding and commitment. Voluntary commitment seems to be more effective than mandatory commitment.
- **Develop High Expectations**—Special activities need to be conducted to help all staff understand and believe that all students can learn and that teacher expectations influence student achievement. The opportunity to discuss ways of communicating expectations to students is helpful.
- **Review Effective Classroom Research**—There is a large body of research on effective classrooms (Good 1982) that describes how teachers' behaviors influence student achievement, and how teacher behaviors tend to vary according to the nature of the student. This information can be used by staff to evaluate their current teaching practices and to develop ways of improving their instructional behaviors.
- **Select Outcome Measures**—School effectiveness requires clearly stated instructional goals and measures to monitor student progress on those goals. The school staff needs to select measures and to use the assessment results for instructional planning and revision.

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OVERVIEW on EXCELLENCE

ERIC DIGEST NO.32

Clearinghouse on Adult, Career, and Vocational Education

EFFECTS OF CAREER EDUCATION ON STUDENT ACHIEVEMENT AND RETENTION

Excellence and Career Education Goals

The report of the National Commission on Excellence in Education (1983), *A Nation at Risk*, stresses the importance of teaching basic skills, as well as ensuring that students have the ability to apply these skills to everyday life situations. The report further acknowledges the importance of programs that support students' personal, educational, and occupational goals.

Career education programs are designed to enhance the career development and career-relatedness skills of students. Campbell et al. (1983) found the following relevant criteria for evaluating career education programs:

- Academic and basic skills performance
- School retention and attendance
- Career and educational planning skills

The first two of these criteria support student achievement in the content areas, as outlined in *A Nation at Risk*. The third criterion relates to the stated need for students to have successful learning experiences to support their personal, educational, and occupational goals. Educational and career planning skills are needed if students are to develop realistic educational and occupational plans that can increase their motivation to learn and enhance their achievement through appropriate educational placement. This *ERIC Digest* reviews the evidence of career education's effect on these three areas related to educational excellence.

Career Education Models

Before reviewing the effectiveness of career education in achieving these goals, one must understand career education program models so that results can be equated with the program model that produced them. Three broad program models are evident in career education programs.

- **Classroom-based Career Education Model**—This model stresses the delivery of career education within the existing curriculum structure. Curriculum infusion is used to develop the dual objectives of the learning experience: the subject-oriented objectives and the career-related objective. Classroom-based programs also emphasize learning activities that help students understand the application of basic skills in occupational and other real-life situations.
- **Career Guidance and Counseling Model**—This model stresses individualized guidance and counseling activities designed to help the students understand themselves better and set educational and occupational goals that are realistic and personally satisfying. These activities may be provided to individuals, small groups, or even classes of students. They are guided by school counselors with assistance from other school staff, such as teachers and media specialists.
- **Experience-based Career Education**—This career education model is an academically oriented, community-based program in which students learn basic skills in community work sites. A learning coordinator helps students develop individual learning plans that specify both subject matter and career-related objectives. Students are then placed in community work sites, where they participate in learning activities under the direction of a resource person who is employed at the site.

Effects of Career Education on School Achievement

Evaluations of the effects of career education on academic and basic skills achievement have revealed the following:

- Forty-three studies of career education's impact on reading and mathematics achievement indicate that there is little or no change in academic achievement when career education is introduced into the curriculum. Since, in selected instances, the evidence of positive impact of career education is strong, it would seem premature to conclude that career education has no potential for stimulating basic skills (Bonnet 1979).
- In general, signifi[illegible]ifferences in academic achievement and in realis[illegible]oice of courses of study are found to favor groups exposed to guidance and counseling, as compared with those not so exposed. Also, guidance and counseling processes integrated with remedial instruction in mathematics and reading have been found to increase academic achievement significantly (Herr 1983).
- Educationally disadvantaged students who participated in an integrated program of vocational, compensatory, and career education experienced significant changes in achievement levels (Campbell et al. 1983).
- A study of experience-based career education that measured math and reading achievement both at the end of the program and after a 3-month follow-up found that math achievement was lower during the learning period for the experience-based learning students than for traditional learning students. However, it was higher for the experience-based students during the follow-up interval. There were no differences found for reading. This may indicate that experience-based career education has a positive effect on the retention of learning (Crowe and Harvey 1980).

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Effects of Career Education on School Retention

The review of evaluation studies by Campbell et al. (1983) reported the following effects of career education on student retention and attendance:

- Counseling programs specifically combined with supportive instruction have been found to be successful in motivating truant, low-income boys to attend school regularly.
- Potential dropouts who received individual and group counseling, took field trips to employment sites, heard guest speakers, and saw relevant films experienced a significant decrease in their dropout rate.
- A study of 10th- and 11th-grade Indian youths who participated in counseling and career exploration activities revealed a significant decrease in their dropout rate.
- The use of vocational counseling to help students select vocational programs proved to be a significant factor in completion rates for selected vocational programs.

Effects of Career Education on Career and Educational Planning Skills

Career and educational planning skills can help students make appropriate personal, educational, and occupational plans that can increase the perceived relevance of their education. Results of evaluations of career education indicate the following:

- In 34 studies of the effects of career guidance on career and educational planning skills, 27 studies found a positive effect. The most frequently mentioned types of interventions were experience-based career education and career counseling (Campbell et al. 1983).
- In 19 studies that examined career decision-making skills, 18 studies showed positive effects in this area. These effects on career decision-making skills were evident at both the high school and junior high levels (Bonnet 1979).
- Guidance programs do appear to help students become more competent decision makers, select high school courses, and make high school plans that are more congruent with their abilities than those students not exposed to these programs (Herr 1983).
- Counseled students in middle schools have been found to make more realistic choices in high school courses and in part-time work (Herr 1983).
- Men and women students with identifiable educational goals—reasons that are related to why they are doing what they are doing—seem consistently to be better prepared for college than students who have no such reason for being in college (Herr 1983).

Summary of Career Education Effects

Career education (including career guidance and counseling, experience-based career education, and career-related classroom activities) has been shown to support several educational excellence goals. In some cases, these programs increase basic skills achievement, particularly in the areas of skills application and long-term retention of skills. Students with low motivation have shown improvement in school attendance and retention after participating in career education experiences. Also, vocational students who have participated in career education are more likely to complete the programs they have selected. Finally, career education consistently demonstrates its effectiveness in increasing students' career planning skills, thus supporting the development of realistic personal, educational, and occupational goals.

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TIME ON TASK IN VOCATIONAL EDUCATION

Why Is Time an Important Factor?

The concept of time is a critical topic in education. Time in relationship to learning generally is viewed from two perspectives. First, from an economic perspective, time is a resource that, along with other resources, affects the productivity of schooling. Second, from a psychological perspective, time is a mediating factor in the teaching/learning process (Karweit 1983). Both views suggest that time is linked to educational achievement or learning outcomes.

The amount of time available for educational purposes is limited and stems from legal, institutional, and individual decisions. Karweit (1983) notes several points about the sources of learning time:

- State laws prescribe the number of school days per year, with an average of approximately 179 days.
- State laws prescribe the minimum length of the school day. In elementary schools, an average range is 4 to 6 hours. In secondary schools, the school day may be somewhat longer.
- The institution schedules the school day for instructional and noninstructional activities. For example, of a 6-hour school day, only 4 hours may be scheduled for instructional purposes.
- Individual classroom teachers schedule the use of the available instructional time.

There are, however, numerous factors that influence the scheduled instructional time. The time allocated for learning is the maximum amount of time that can be used for instructional purposes. Maximizing the available instructional time is of key importance to educators when difficult-to-control influences are considered. Some of the key influences that serve to reduce allocated time are as follows:

- Student absenteeism, teacher strikes, and school closings because of inclement weather or financial crises reduce the scheduled number of school days per year.
- The school day may be shortened as a result of scheduling double shifts.
- The actual number of hours used for instruction are affected by factors external to the classroom. Special school assemblies, standardized testing programs, and classroom transitions are examples that limit the opportunity for learning. (Ibid.)

Time, unlike many other such significant variables as family background and sex, can be controlled—at least to some extent. This is the major reason for focused attention on the use of time as a means of improving the quality of education.

What Is Time on Task?

Additional aspects of learning time are associated with the student or an entire class of students. The amount of time a student is actively engaged in learning activities is time on task. Most recent research studies looking at time as a factor in the learning process examine the influence of time on task for student achievement. The results of these studies indicate positive achievement as a result of time on task and very few negative effects. A reasonable doubt remains, however, about the magnitude of the effect that time on task has on achievement (Karweit 1983). It is believed learning depends on necessary classroom conditions that influence the effect of time on task. Variations in on-task behavior may be explained by such differences as the following:

- The nature of the curriculum studied
- The extent of diversity of student characteristics within the instructional group
- The skills of teachers

How Is Time Used in Secondary Vocational Education?

Although the majority of studies of time on task have been conducted with elementary students learning basic skills, findings from two exploratory studies (Halasz and Behm 1983; Halasz, Behm, and Fisch 1984) report the average proportions of time spent by secondary students in selected vocational education classes as follows:

- Students spend 56 to 63 percent of instructional time on task/content (i.e., basic skills, technical skills, and employability skills).
- Students spend 9 to 13 percent of instructional time on task/noncontent (i.e., set up, clean up, and other noncontent-related tasks).
- Students spend approximately one-fourth of the instructional time socializing—time off task.
- Students spend about 5 percent of the instructional time on scheduled breaks—time off task.

In secondary vocational education classes, how time is spent differs among service areas as well as among the individual classes. Of the three service areas observed (i.e., agriculture, business and office, and trade and industrial), Halasz, Behm, and Fisch (1984) found that the agriculture classes had the highest proportion of time on task (64 percent) in comparison to business and office classes (75 percent) and trade and industrial classes (71 percent). Variations among classes within the same area were found, as well. The largest differences were in the trade and

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industrial service area. Although a machine shop class spent 79 percent of time on task, an auto mechanics class spent only 45 percent of instructional time on task. Overall, students in secondary vocational education classes spend slightly more than two-thirds of instructional time on task.

How Is Time Used in Postsecondary Vocational Education?

Several differences between postsecondary and secondary vocational education students suggest that student time on task may differ in the two settings. Postsecondary enrollment is voluntary, and as a result, students are likely to be more highly motivated. Also, postsecondary students are older. Preliminary findings (Halasz, Behm, and Fisch 1984) show the following trends:

- Postsecondary students spend 72 percent of instructional time on task/content (i.e., basic skills, theory, employability skills, and practice).
- Postsecondary students spend approximately 11 percent of instructional time on task/noncontent.
- Postsecondary students spend about 17 percent of instructional time off task (i.e., socializing and breaks).

These findings appear to be consistent with the premise that postsecondary students will be on task a greater proportion of time than secondary students because of their maturity (83 percent versus 70 percent of instructional time). At the postsecondary level, total time on task does not vary much among the service areas or classes.

What Factors Are Related to Efficient Use of Time?

The available minutes and the time used for instruction are, in part, dependent upon such factors as student grouping, class size, instructional strategies, and teacher skills. Primarily, what is done in the time and how appropriate it is affects the learning taking place (Karweit 1983). The relationships between key teacher behaviors and time on task, and between key classroom variables and time on task are summarized by Halasz, Behm, and Fisch (1984) as follows:

- At the secondary level, teacher with-it-ness (i.e., behaviors communicating that the teacher knows what is going on in the classroom) is associated positively with the amount of student time on task.
- The pattern of relationships between teaching methods and student use of time indicates that certain methods (e.g., one-to-one instruction, observation, demonstration) are more conducive than others to eliciting student time on practice, theory, or other on-task behavior.
- Most of the teachers at the secondary level do not appear to maximize class time deliberately, whereas most postsecondary teachers do. That is, secondary teachers do not appear to try to use all of the class time available for relevant tasks.
- Teachers who define class goals clearly and who plan and organize the curriculum elicit greater amounts of student time on task. In fact, definition of class goals is the most important variable related to student time on task at both secondary and postsecondary levels.
- Grouping (i.e., students' physical location and number of tasks performed) is the most important classroom variable in relation to student time on task.

What Can Vocational Education Teachers Do to Improve Time Spend on Task?

"Learning time results from the conversion of the number of days allotted to the number of days attended, from the reduction of the length of the school day to the fraction of the day used for instruction, and from the shrinkage of allocated instructional time in a subject to the time engaged in learning or time on task" (Karweit 1983, p. 18). Halasz, Behm, and Fisch (1984) conclude that vocational teachers, especially in secondary classes (but also in postsecondary classes), can increase time on task by doing the following:

- Define goals clearly
- Consider time an important resource
- Ensure that students' tasks are meaningful
- Improve and diversify teaching methods
- Decrease time for breaks
- Decrease interruptions
- Encourage student independence
- Have positive expectations of students
- Provide positive reinforcement
- Serve as a role model of good work habits

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EMPLOYERS' EXPECTATIONS OF VOCATIONAL EDUCATION

How Do Employers Grade Vocational Education?

The growing interest in the effectiveness of vocational education has spurred efforts to elicit opinions about vocational education from key groups. Employers are one of the publics whose opinions are of prime interest to vocational education. Only by working together with employers can vocational education program staff hope to meet employers' needs for trained personnel. The focus on preparing students for productive participation in the labor market dates back to the 1917 Smith-Hughes Act (Franchak and Smiley 1981).

In our educational system, students often receive grades to denote the quality of their work. The letter grades of A, B, C, D, and F (fail) frequently are used to judge the student's overall performance. The Gallup Poll introduced the practice of asking community members to grade the public schools themselves. In order to determine employers' overall rating of vocational education, a survey (Nunez and Russell 1982) asking respondents to grade both secondary and postsecondary vocational education was distributed to 2,000 randomly selected members of the National Association of Manufacturers. Analysis of surveys from the nearly 40 percent of the sample responding resulted in the following findings:

- A grade of C was given most frequently to secondary vocational education.
- A grade of B was given most frequently to postsecondary vocational education.
- More than half of the respondents gave an A or B grade to postsecondary vocational education.
- Less than 5 percent of the respondents gave a failing grade to vocational education. Only 4 percent gave an F to secondary vocational education, and 1 percent gave an F to postsecondary.

Overall, employers had a more favorable view of postsecondary vocational education than of secondary vocational education. Nunez and Russell (1982) posit that the higher rating for postsecondary vocational education may result from postsecondary vocational students fitting more immediately into the employment structure. Students graduating from the two settings—secondary and postsecondary—enter the job market with somewhat different skills and levels of maturity.

Why Do Employers Hire Vocational Graduates?

Satisfaction of employers with vocational graduates is important to the overall success of vocational education. Seventy-five percent of the employers surveyed in this study said they would rather hire a vocational education graduate than a nonvocational graduate for a job not requiring a 4-year degree. Specific benefits of vocational education to the employer included the following:

- Thirty-nine percent of the manufacturers identified lower training costs as a major benefit of vocational education.
- Sixty percent of the manufacturers stated that less training was required for the same type of job as a result of vocational education.

What Should Vocational Programs Emphasize?

The National Association of Manufacturers survey further revealed that 73 percent of the employers valued the teaching of both employability and occupational skills as a means of preparing youth for employment. Further, the survey showed that the teaching of basic skills was considered of first importance for improving secondary vocational education and second most important for improving postsecondary vocational education.

A study by Starr et al. (1983) revealed that there is consistency between what respondents in the National Association of Manufacturers survey said vocational education should emphasize and the role it has played in preparing individuals for employment. Starr et al. identified the following five roles for vocational education:

- Employability skills development
- Occupational skills development
- Provision of work experience
- Placement of program completers in jobs
- Basic skills development

In their secondary analyses of data from five studies (ibid.), they found that the combined opinions of four publics (i.e., students, school personnel, community representatives, and policymakers) about each role were as follows:

- Employability skills development is important for all students, but is a more important process at the secondary level that it is at the postsecondary level.
- Occupational skills development is an important role for both secondary and postsecondary vocational education.
- The provision of work experience is considered important for both secondary and postsecondary vocational education.
- Training-related placement is not seen as the most important role for either secondary or postsecondary vocational education. However, it is considered to be more important at the postsecondary level.
- Basic skills development is an important role at both secondary and postsecondary levels. However, it is considered to be more important at the secondary level.

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What Are the Barriers to Cooperating with Vocational Education?

There are numerous ways in which vocational educators and employers can work together to improve the quality of education. For example, employers can provide work experiences for vocational students and teachers. Vocational educators, on the other hand, can help employers retrain workers. Survey results (Nunez and Russell 1982) showed that employers perceived providing work experience for students as the most acceptable form of involvement and allowing equipment to be used at the work site as the least acceptable form. Larger companies were more involved with vocational education than smaller ones. The larger companies also awarded higher grades to vocational education. Although increased involvement with vocational education was associated with more positive opinions, the manufacturers noted problems that they had encountered in working with vocational education. The problems identified by the manufacturers are listed in order of importance:

- Inflexible schedules
- Inadequate planning
- Quality of training
- Conflicts or disagreements on goals
- Leadership problems
- Schools not interested in working with business and industry
- Conflicts or disagreements on policies or regulations

What Improvements Can Be Made?

Feedback from employers can serve a variety of purposes. Franchak and Smiley (1981) include the following reasons for obtaining employer opinions:

- Information on employer satisfaction can be used for accountability purposes.
- Employer input can be used to heighten interest in vocational education.
- Gathering employer opinions can be an effective means of setting priorities for program improvement.
- Employer assessment can result in improved understanding between vocational education and industry.
- Information from employers on job skills and attitudes expected of employees can be very helpful for the guidance and counseling function.
- Employer feedback can assist vocational educators in providing a capable labor force.

The manufacturers' survey of vocational education (Nunez and Russell 1982) incorporates suggestions for program improvement. At the secondary level, it is most important for vocational education to do the following:

- Stress the teaching of the basics (reading, writing, and arithmetic)
- Ensure that individuals who do not go on to college have access to vocational education
- Update vocational education programs
- Provide work experiences for vocational students
- Involve employers more in vocational programming

According to the manufacturers, the top five priorities at the postsecondary level are for vocational education to do the following:

- Provide work experiences for vocational students
- Stress the teaching of basics
- Involve employers more in vocational programming
- Update vocational programs
- Ensure that individuals who do not go on to college have access to vocational education

The manufacturers (ibid.) also identified changes for vocational education in order of importance as follows:

1. Increase employability skills training at the high school level
2. Increase vocational education courses in community or junior colleges
3. Increase employers' involvement in the evaluation of vocational programs
4. Ensure that adults have access to training for reentry skills for the job market
5. Expand the use of private sector personnel as resources for vocational education classes

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OVERVIEW on EXCELLENCE

ERIC® DIGEST NO. 35

Clearinghouse on Adult, Career, and Vocational Education

LEARNING THE NEW BASICS THROUGH VOCATIONAL EDUCATION

What Are the New Basics?

The report *A Nation at Risk* (1983) identifies English, mathematics, science, social studies, and computer science as the "new basics," and recommends that state and local high school graduation requirements be strengthened to include a foundation in these five subjects. Vocational educators have also been concerned about the need to provide students with a good foundation in basic skills. For some time, they have been aware of a marked decline in both the quality and quantity of basic skills achievement by students in vocational programs (Weber and Silvani-Lacey 1983). This *ERIC Digest* reviews the role of vocational education in developing basic skills and suggest strategies and resources for learning basic skills through vocational education.

Why Are Basic Skills an Important Part of Vocational Education?

A good foundation in basic skills is considered essential for successful participation in today's society. For example, individuals need basic skills if they wish to do the following:

- Demonstrate employability and occupational competency
- Attain upward mobility (Lotto 1983; Weber and Silvani-Lacey 1983)

Basic skills play an important role in ensuring job success. Employers expect their employees to be able to use basic skills to find solutions to work-related problems. Thus, basic skills are viewed as tools for achieving increased productivity (Campbell-Thrane et al. 1983).

Because basic skills are essential to functioning in today's society, they represent a critical area of learning that needs to be addressed in all areas of the curriculum. Since a number of research studies report that higher payoffs from vocational training can be expected when basic skills instruction and vocational skills acquisition are related, vocational educators need to look for ways to incorporate basic skills instruction into their curricula (Campbell-Thrane et al. 1983).

What Are the Basic Skills Attainment Levels for Vocational Students?

A large number of studies have examined the relationship between participation in vocational education and basic skills attainment. This body of literature has been reviewed and synthesized in two recent research reports developed by staff at the National Center for Research in Vocational Education (Lotto 1983; Weber et al. 1982). Some of the findings from these reports are summarized below:

- In comparison to academic students, secondary vocational students are less proficient in basic skills, but they are about the same as general track students (Lotto 1983; Weber et al. 1982).
- The basic skills attainment of secondary vocational students varies according to the service area or program in which they are enrolled (Weber et al. 1982).
- The basic skills levels of potential and actual dropouts usually increases substantially when they participate in vocationally oriented programs with basic skills components (ibid.).
- It appears that basic skills proficiency is significantly related to such outcomes as employment level, salary, and employment in area of training (Lotto 1983; Weber et al. 1982).

What Strategies Can Be Used to Learn the New Basics through Vocational Education?

A number of strategies that can be used to incorporate basic skills instruction into the vocational curriculum are available to vocational educators. Three models for delivering basic skills instruction in conjunction with vocational education are described below. The models—integrated, nonintegrated, and combination—provide a range of options for vocational education personnel who are deciding how best to deliver basic skills instruction (Campbell-Thrane et al. 1983).

Nonintegrated Model

The nonintegrated model is traditional in approach and emphasizes teaching basic skills in a classroom setting separate from vocational training. The instruction is delivered by subject matter specialists, that is, mathematics teachers teach math, science teachers teach science principles, and so forth. An important assumption underlying the adoption and use of the nonintegrated model is that basic skills acquisition can be taught separately from students' vocational and academic interests and that a transfer of skills will occur later. Disadvantages of the nonintegrated model include the following:

- Lack of vocational relevance in basic skills instruction
- Scheduling problems
- Increased space and personnel costs
- Students receiving remedial instruction but missing regular instruction (ibid.)

Integrated Model

The integrated model is designed to deliver basic skills instruction as a part of the vocational curriculum. In this model, the vocational teacher assumes major responsibility for the following:

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- Identification of basic skills requirements for entry into vocations in his or her area
- Diagnosis of students' basic skills deficiencies
- Instruction to remediate any identified basic skills deficiencies

A basic assumption underlying the adoption and use of the integrated model is that there should be a relationship between the vocational area and the kinds of basic skills taught. Disadvantages of the integrated model include the following:

- Diversion of instructor time from vocational content to content integrating basic skills
- Need to deal with students who have varying levels of basic skills proficiencies
- Lack of time for students with serious basic skill deficiencies to "catch up" (ibid.)

Combination Model

Because both the integrated and nonintegrated models contain major disadvantages, a combination model that contains elements of both can be developed. The combination model, blending features of the other two models, would be designed to meet the needs and resources of a particular school district. Since a combination model would be tailored to a local situation, it could take a number of forms. For example, a school district might choose to construct a separate classroom area within the vocational lab or shop area where basic skills would be taught. Although the instruction would be separate from vocational training (a feature of the nonintegrated model), it would still be designed to relate directly to the vocational area (a feature of the integrated system). Combination models can be designed by local districts to minimize what they perceive are the disadvantages of the integrated and nonintegrated models (Campbell-Thrane et al. 1983).

What Resources Are Available to Teach the New Basics through Vocational Education?

A number of resources have been developed that can be used in learning the new basics through vocational education. The ERIC database is an excellent source of information in this area. Some examples of materials available through ERIC are described below.

- *Sample Lesson Ideas for Basic Skills Instruction in Selected Vocational Programs* (Dunn, Gray, and Martini 1982a) provides lesson ideas for secondary vocational programs in the areas of agricultural, distributive, office, health, occupational home economics, and trade and industrial education. The lessons focus on the basic skills of mathematics, reading, writing, and oral communication.
- *Selected Instructional Materials for Teaching Basic Skills in Vocational Education* (Dunn, Gray, and Martini 1982b) gives a list of approximately 200 vocationally relevant instructional materials and sources regarding basic skills development. Both teacher-made and commercially available materials focusing on basic skills in mathematics, reading, writing, and oral communication within the context of various vocational programs are listed.

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